

## SEQUENCE LISTING

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LARSEN, RASMUS  
JOHANSEN, ERIC

<120> FOOD-GRADE CLONING VECTOR AND THEIR USE IN LACTIC ACID  
BACTERIA

<130> 030307-0191

<140> 09/673,617

<141> 2001-01-25

<150> PCT/DK99/00209

<151> 1999-04-14

<150> 60/082,555

<151> 1998-04-21

<150> DK 0551/98

<151> 1998-04-21

<160> 28

<170> PatentIn Ver. 2.1

<210> 1

<211> 89

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: DNA sequence  
comprising the tRNA encoding suppressor gene

<400> 1

ggagccatgg cagagtggta atgcaacgga ctctaaatcc gtcgaaccgt gtaaagcggc 60  
gcaggggttc aaatcccctt gactcctta 89

<210> 2

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 2

cgaattcata ttgattaat gagaatatgg aacc

34

<210> 3

<211> 27

<212> DNA

<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 3  
cgggatcctt tcaggaaggt aattaac 27

<210> 4  
<211> 29  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 4  
cgaattcaac atttttgtat aaatatgcg 29

<210> 5  
<211> 28  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 5  
gggaattcag gaaggtaatt aactatgg 28

<210> 6  
<211> 36  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 6  
gcagatctaa gcttgattca agaagtaaaa gaaggc 36

<210> 7  
<211> 31  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 7  
atagatctac tcgatgccaa gaatggaccg c 31

<210> 8  
<211> 28

<212> DNA  
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<220>  
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 <223> a, t, c, g, other or unknown

<220>  
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 <222> (14)  
 <223> a, t, c, g, other or unknown

<220>  
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 <222> (17)  
 <223> a, t, c, g, other or unknown

<220>  
 <221> modified\_base  
 <222> (20)  
 <223> a, t, c, g, other or unknown

<400> 8  
 aaaggcctgt natngcnctn gayttycc

28

<210> 9  
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 <212> DNA  
 <213> Artificial Sequence

<220>  
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 <222> (13)  
 <223> a, t, c, g, other or unknown

<220>  
 <221> modified\_base  
 <222> (16)  
 <223> a, t, c, g, other or unknown

<400> 9  
 tggacgaatt ccnggngt

18

<210> 10  
 <211> 19  
 <212> DNA  
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 10

catagtaaac gacttgggg

19

<210> 11

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 11

tacgcacaaa aaaccgct

18

<210> 12

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 12

ggtcgccttt acttgcacc

19

<210> 13

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 13

gattatattg ttgtcggccg

20

<210> 14

<211> 24

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Primer

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<222> (24)

<223> a, t, c, g, other or unknown

<400> 14

gctctagagc mwatygwwat dggn

24

<210> 15  
 <211> 25  
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<220>  
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<220>  
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 <222> (4)  
 <223> a, t, c, g, other or unknown

<400> 15  
 ggtngartgg aaygaraara thaay 25

<210> 16  
 <211> 24  
 <212> DNA  
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<220>  
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<400> 16  
 cctcaaccta ggagaaaatt atgc 24

<210> 17  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Primer

<400> 17  
 tctcctaggt tgaggtaat tgtg 24

<210> 18  
 <211> 22  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Primer

<400> 18  
 atagatctgc ttagaaaact tg 22

<210> 19  
 <211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 19

atagatctgc atgtaagcaa aaacc

25

<210> 20

<211> 12

<212> PRT

<213> Lactococcus lactis

<400> 20

Thr Gln Leu Thr Ser Thr Ser Glu Lys Ile Met Gln  
1 5 10

<210> 21

<211> 36

<212> DNA

<213> Lactococcus lactis

<220>

<221> CDS

<222> (1)..(36)

<400> 21

aca caa tta acc tca act tct gag aaa att atg caa  
Thr Gln Leu Thr Ser Thr Ser Glu Lys Ile Met Gln  
1 5 10

36

<210> 22

<211> 36

<212> DNA

<213> Lactococcus lactis

<220>

<221> CDS

<222> (1)..(18)

<400> 22

aca caa tta acc tca acc taggagaaaa ttatgcaa  
Thr Gln Leu Thr Ser Thr  
1 5

36

<210> 23

<211> 937

<212> DNA

<213> Lactococcus lactis

<220>

<221> CDS

<222> (224)..(934)

<400> 23

tgattttatt attagctaaa attactgaca gcctgtttaa tcattctgtc agtaaaatgc 60

gaccaaagcg agcattttat ccatagctaa aagaattgtc agcggagctg ataattctct 120

cgttcgttag cgaccaaagc gagcatttta tggatagcta aaagaattgt catcaaagct 180

gataattctg tcattaaata tttagaaaaa ggaagtagaa aaa atg caa gaa aat 235  
Met Gln Glu Asn  
1

aga cct gtc att gcc ctt gat ttc cct gaa ttc tca gac gta aaa gat 283  
Arg Pro Val Ile Ala Leu Asp Phe Pro Glu Phe Ser Asp Val Lys Asp  
5 10 15 20

ttt ctc gaa aaa ttt gac ccg tca gaa caa ttg tat att aaa cta gga 331  
Phe Leu Glu Lys Phe Asp Pro Ser Glu Gln Leu Tyr Ile Lys Leu Gly  
25 30 35

atg gaa ctt ttt tac acg gct ggg ccc caa gtc gtt tac tat gta aaa 379  
Met Glu Leu Phe Tyr Thr Ala Gly Pro Gln Val Val Tyr Tyr Val Lys  
40 45 50

tcg ctc ggc cac agt gta ttc ctt gat tta aaa ctc cat gat att cca 427  
Ser Leu Gly His Ser Val Phe Leu Asp Leu Lys Leu His Asp Ile Pro  
55 60 65

aac acc gtt gaa tcc tca atg cgt gtt tta gca cgt ttg gga ttg gat 475  
Asn Thr Val Glu Ser Ser Met Arg Val Leu Ala Arg Leu Gly Leu Asp  
70 75 80

atg	gtt	aat	gtt	cac	gcc	gct	ggt	ggt	gtt	gaa	atg	atg	gtt	gca	gct	523
Met	Val	Asn	Val	His	Ala	Ala	Gly	Gly	Val	Glu	Met	Met	Val	Ala	Ala	
85					90					95					100	

aaa cgc ggt tta gag gct gga acg cca gtt gga cgg caa agg cca aaa 571  
Lys Arg Gly Leu Glu Ala Gly Thr Pro Val Gly Arg Gln Arg Pro Lys  
105 110 115

tta att gcg gtc	aca caa tta acc	tca act tct gag	aaa att atg caa	619
Leu Ile Ala Val	Thr Gln Leu Thr	Ser Thr Ser Glu	Lys Ile Met Gln	
120	125	130		

aat gac caa aaa att atg act agt ctt gaa gaa tcg gtt att aat tac 667  
Asn Asp Gln Lys Ile Met Thr Ser Leu Glu Glu Ser Val Ile Asn Tyr  
135 140 145

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gca caa aaa acc gct caa gca gga ctt gac ggt gtc gtt tgt tgc gca      715
Ala Gln Lys Thr Ala Gln Ala Gly Leu Asp Gly Val Val Cys Ser Ala
      150                      155                      160

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cat gaa gtt gaa aaa att aaa gca gcg aca tcg aaa gaa ttc att tgt 763  
His Glu Val Glu Lys Ile Lys Ala Ala Thr Ser Lys Glu Phe Ile Cys  
165 170 175 180

ctc aca cca gga att cgc cca gaa ggt gca agt aaa ggc gac caa aaa 811  
 Leu Thr Pro Gly Ile Arg Pro Glu Gly Ala Ser Lys Gly Asp Gln Lys  
                   185                                  190                                  195

cga gta atg aca cct aaa gaa gca aga aca att ggt tca gat tat att 859  
 Arg Val Met Thr Pro Lys Glu Ala Arg Thr Ile Gly Ser Asp Tyr Ile  
                   200                                  205                                  210

gtt gtc ggc cgt cca att acc caa gca aaa gat cca gta gct agc tat 907  
 Val Val Gly Arg Pro Ile Thr Gln Ala Lys Asp Pro Val Ala Ser Tyr  
                   215                                  220                                  225

cat gcg ata aaa gca gaa tgg aat caa taa 937  
 His Ala Ile Lys Ala Glu Trp Asn Gln  
                   230                                  235

<210> 24

<211> 237

<212> PRT

<213> Lactococcus lactis

<400> 24

Met Gln Glu Asn Arg Pro Val Ile Ala Leu Asp Phe Pro Glu Phe Ser  
   1                                  5                                  10                                  15

Asp Val Lys Asp Phe Leu Glu Lys Phe Asp Pro Ser Glu Gln Leu Tyr  
                   20                                  25                                  30

Ile Lys Leu Gly Met Glu Leu Phe Tyr Thr Ala Gly Pro Gln Val Val  
                   35                                  40                                  45

Tyr Tyr Val Lys Ser Leu Gly His Ser Val Phe Leu Asp Leu Lys Leu  
   50                                  55                                  60

His Asp Ile Pro Asn Thr Val Glu Ser Ser Met Arg Val Leu Ala Arg  
   65                                  70                                  75                                  80

Leu Gly Leu Asp Met Val Asn Val His Ala Ala Gly Gly Val Glu Met  
                   85                                  90                                  95

Met Val Ala Ala Lys Arg Gly Leu Glu Ala Gly Thr Pro Val Gly Arg  
                   100                                  105                                  110

Gln Arg Pro Lys Leu Ile Ala Val Thr Gln Leu Thr Ser Thr Ser Glu  
   115                                  120                                  125

Lys Ile Met Gln Asn Asp Gln Lys Ile Met Thr Ser Leu Glu Glu Ser  
   130                                  135                                  140

Val Ile Asn Tyr Ala Gln Lys Thr Ala Gln Ala Gly Leu Asp Gly Val  
   145                                  150                                  155                                  160

Val Cys Ser Ala His Glu Val Glu Lys Ile Lys Ala Ala Thr Ser Lys  
                   165                                  170                                  175

Glu Phe Ile Cys Leu Thr Pro Gly Ile Arg Pro Glu Gly Ala Ser Lys  
                   180                                  185                                  190



Gly Asp Gln Lys Arg Val Met Thr Pro Lys Glu Ala Arg Thr Ile Gly  
 195 200 205

Ser Asp Tyr Ile Val Val Gly Arg Pro Ile Thr Gln Ala Lys Asp Pro  
 210 215 220

Val Ala Ser Tyr His Ala Ile Lys Ala Glu Trp Asn Gln  
 225 230 235

<210> 25  
 <211> 54  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Vector pFG100

<400> 25  
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<210> 26  
 <211> 46  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Vector pFG100

<400> 26  
 ggatccacta gttctagagc ggccgccacc gcggtggagc tccagc 46

<210> 27  
 <211> 69  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Vector pFG200

<400> 27  
 gaattcatcg atatctagat ctcgagctcg cgaaagcttg gctgcaggtc gacggatccc 60  
 cggaattc 69

<210> 28  
 <211> 6  
 <212> PRT  
 <213> Lactococcus lactis

<400> 28  
 Thr Gln Leu Thr Ser Thr  
 1 5